

Serial No. 10/705,572
Docket No. 8681RCR
Response date October 14, 2005
Reply to Office Action of June 14, 2005

REMARKS

Status of claims

Applicants thank the Examiner for the consideration given to the present application. Claim 10 has been canceled without prejudice. Claims 7 and 13 have been amended. New claims 14-16 have been added. Support for the amendments and new claims is found in the specification and figures, and thus no new matter has been entered in the claims. Claims 1-9, and 11-15 are pending in the present application.

Terminal Disclaimer

Applicants thank the Examiner for reviewing and accepting the terminal disclaimer filed on May 2, 2005, in the present application.

Rejection of Claim 1-2, 5, and 14-15 under 35 U.S.C. §103

Claims 1-2, 5, and 14-15 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Levy in view of Derbyshire et al., U.S. Patent No. 6,057,262 and Tremblay et al., U.S. Patent No. 6,660,166 B2.

Claims 7-11 and 13 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Beauman et al., U.S. Patent No. 4,396,512 in view of Derbyshire et al.

Claims 3-4 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Levy in view of Derbyshire et al. and Tremblay et al. as applied to claim 1 above, and further in view of Beauman et al.

Claim 6 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Levy in view of Derbyshire et al. and Tremblay et al. as applied to claim 1 above, and further in view of Denkewicz, Jr. et al., U.S. Patent No. 5,772,896.

Claim 12 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Beauman et al. in view of Derbyshire et al. as applied to claim 7 above, and further in view of Levy and Denkewicz, Jr. et al.

Applicants respectfully traverse the rejection of the claims and submit that the Examiner has not met his burden of establishing a prima facie case of obviousness under §103. MPEP

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§2145. In order to establish a prima facie case of obviousness under §103, the Examiner has the burden of showing, by reasoning or evidence, that: 1) there is some suggestion or motivation, either in the references themselves or in the knowledge available in the art, to modify that reference's teachings; 2) there is a reasonable expectation on the part of one of ordinary skill in the art that the modification or combination has a reasonable expectation of success; and 3) the prior art references (or references when combined) teach or suggest all the claim limitations. MPEP §2145.

Applicants respectfully submit that none of the references (Levy, Beauman et al., Derbyshire et al., Tremblay et al., or Denkewicz, Jr. et al.) teach or suggest all of the limitations of Applicants' independent claims 1, 7, and 13. Applicants' independent claim 1 recites a kit that includes, *inter alia*, a filter for providing potable water formed at least in part from mesoporous activated carbon filter particles and a package for containing the filter, wherein the package comprises information that the filter provides bacterial, viral, or microbial removal or killing. The Examiner asserted that Levy teaches all the limitations of independent claim 1 except for mesoporous activated carbon and a package or a method of communicating information. In an attempt to resolve these deficiencies in the primary reference, the Examiner cited Derbyshire et al. as teaching mesoporous activated carbon and Tremblay et al. as teaching a filter package containing information that the filter provides reduction of water contaminants and then concluded that it would have been obvious to modify Levy with the element of Derbyshire et al., "because it is an activated carbon used in waste water treatment." This evidence is insufficient to meet a prima facie case of obviousness.

As set forth above, Applicants' claim 1 requires a package that comprises information that the mesoporous activated carbon filter provides bacterial, viral, or microbial removal or killing. As asserted by the Examiner, Levy does not disclose mesoporous activated carbon. Moreover, Levy lacks any teaching or suggestion of a package containing information that mesoporous activated carbon filter or filter material provides bacterial, viral, or microbial removal or killing. Tremblay et al. only disclose an activated carbon filter (not mesoporous activated carbon) for the removal of hormones and information that this filter may remove hormones. Tremblay et al. does not teach or suggest a mesoporous activated carbon filter or filter material or information that such a filter may remove or kill bacteria, viruses, or microbes.

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In addition, Derbyshire et al. teaches a mesoporous activated carbon filter for treating waste water, but does not teach, or even suggest, that it may remove or kill bacteria, viruses, or microbes. The Derbyshire et al. reference is completely silent as to mesoporous activated carbon filter or filter material removing or killing bacteria, viruses, or microbes. Thus, Derbyshire et al. do not disclose, suggest, or make obvious a filter package with information that a mesoporous activated carbon filter provides bacterial, viral, or microbial removal or killing. Therefore, Applicants respectfully submit that the references, singularly or in combination, do not disclose or suggest all of the limitations of Applicants' independent claim 1.

Applicants' independent claims 7 and 13 recite a filter that includes, *inter alia*, a filter material formed at least in part from a plurality of mesoporous activated carbon filter particles, wherein the filter material has a F-BLR of greater than about 2 logs, and a F-VLR of greater than about 1 log. Applicants' specification defines F-BLR ("Filter Bacteria Log Removal") as

"the bacteria removal capability of the filter after the flow of the first 2,000 filter material pore volumes. The F-BLR is defined and calculated as:

$$\text{F-BLR} = -\log [(\text{effluent concentration of E. coli})/(\text{influent concentration of E. coli})],$$

wherein the 'influent concentration of E. coli' is set to about 1×10^8 CFU/L continuously throughout the test and the 'effluent concentration of E. coli' is measured after about 2,000 filter material pore volumes flow through the filter." (p. 7, lines 9-16).

Applicants' specification also defines F-VLR ("Filter Viruses Log Removal") as

"the virus removal capability of the filter after the flow of the first 2,000 filter material pore volumes. The F-VLR is defined and calculated as:

$$\text{F-VLR} = -\log [(\text{effluent concentration of MS-2})/(\text{influent concentration of MS-2})],$$

where the 'influent concentration of MS-2' is set to about 1×10^7 PFU/L continuously throughout the test and the 'effluent concentration of MS-2' is measured after about 2,000 filter material pore volumes flow through the filter." (p. 7, lines 21-28).

Regarding independent claims 7 and 13, the Examiner asserted that Beauman et al. disclose all of the limitations except mesoporous activated carbon. In an attempt to resolve this deficiency in the primary reference, the Examiner cited Derbyshire et al. as teaching mesoporous activated carbon. In addition, the Examiner stated that Beauman et al. disclose that the F-BLR and F-VLR values are as claimed by the invention and in compliance with EPA regulations cited in Beauman

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et al. The Examiner then concluded that it would have been obvious to modify Beauman et al. with the element of Derbyshire et al., "because it is an activated carbon used in waste water treatment." This is insufficient to meet a prima facie case of obviousness.

As set forth above, Applicants' claims 7 and 13 require a filter material formed at least in part from a plurality of mesoporous activated carbon filter particles, wherein the filter material has a F-BLR of greater than about 2 logs, and a F-VLR of greater than about 1 log. First, Beauman et al. is silent regarding mesoporous activated carbon filter particles. Second, Beauman et al. teach a bacteriostatic filter that is configured, not to remove bacteria and viruses from the influent and effluent of water as recited in Applicants' claims, but to control or suppress the growth of bacteria on or in the filter during stagnant periods. (Abstract). The bacteriostatic filter of Beauman et al. is completely different than Applicants' claimed filter. Third, the Examiner asserted that the F-BLR and F-VLR values are the same as claimed by the invention and in compliance with the EPA regulations disclosed in Beauman et al. Applicants submit that the EPA regulations cited in Beauman et al. are concerned with bacteriastatic filter criteria, which are not the same as the EPA regulations covering bacteria and virus removal in the influent and effluent of water discussed in Applicants' present invention, and thus the EPA regulations in Beauman et al. do not disclose the F-BLR and F-VLR as recited in Applicants' claims 7 and 13. Finally, although Derbyshire et al. disclose mesoporous activated carbon for the treatment of waste water, this reference does not recognize mesoporous activated carbon filter or filter material as having a F-BLR of greater than about 2 logs, and a F-VLR of greater than about 1 log and does not teach, suggest, or recognize the ability to provide potable water using such a material. Thus, none of the references applied by the Examiner, singularly or in combination, teach or suggest all of the limitations of Applicants' claims 7 and 13.

Notwithstanding the above arguments, Applicants respectfully submit that neither the references themselves (Levy, Beauman et al., Derbyshire et al., Tremblay et al., or Denkwicz, Jr. et al.) nor the knowledge available in the art provide any suggestion or motivation to combine Derbyshire et al. with Levy or Beauman et al. or provide one of ordinary skill in the art a reasonable expectation that the modification has any reasonable expectation of success. As admitted by the Examiner, neither Levy nor Beauman et al. teach or suggest mesoporous activated carbon or the claimed intra-particle pore size. In an attempt to resolve these

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deficiencies in the primary references, the Examiner asserted that it would have been obvious to modify Levy and Beauman et al. with the element of Derbyshire et al., "because it is an activated carbon used in waste water treatment." Applicants submit that just because Derbyshire et al. teach mesoporous activated carbon configured to treat waste water, it does not necessarily follow or suggest that mesoporous activated carbon is capable of removing larger particles such as microorganisms from water to provide potable water. This is an assumption made by the Examiner.

As stated by the Federal Circuit Court in *In re Fine*, "Whether a particular combination might be 'obvious to try' is not a legitimate test of patentability." *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988) (citing *In re Geiger*, 815 F.2d 686, 688 (Fed. Cir. 1987)). First, the Applicants submit that none of the references teach or suggest mesoporous activated carbon in a filter configured to remove or kill bacteria, viruses, or microbes. Second, Applicants submit that although Derbyshire et al. teach mesoporous activated carbons are used in absorption of large molecules such as color bodies. (col. 1, lines 30-35), not large particles such as microorganisms. This still is insufficient as a teaching or even a suggestion that mesoporous activated carbon may remove or kill microorganisms such as bacterial, viruses, or microbes.

Applicants submit that it is and was known by one of ordinary skill in the art that large molecules range in size from approximately 1 nm to 10 nm, which is significantly smaller than the average sizes of viruses (ranging in size from approximately 25 nm to 80 nm) or bacteria (ranging in size from approximately 1 μ m to 10 μ m). For example, *E. coli* has an approximate size of 1 μ m to 3 μ m, which is 100 to 1000 times larger than the size of the mesopores (intra-particle pores of the carbon particles). Thus, one of ordinary skill in the art at the time of the invention would have understood that mesoporous activated carbon would not have intra-particle pores large enough to capture (remove) a sufficient enough amount of microorganisms as recited in claim 1, let alone having a F-BLR or F-VLR has recited in claims 7 and 13. Therefore, Applicants respectfully submit that there is insufficient motivation or suggestion in the references themselves or in the knowledge available in the art to modify Levy or Beauman et al. with the teachings of Derbyshire, and that one of ordinary skill in the art would have no reasonable expectation that such a modification would be successful.

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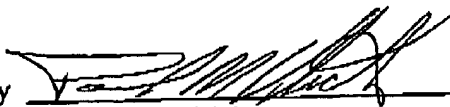
Regarding dependent claim 12, the Examiner asserted that Levy teaches that the plurality of mesoporous activated carbon filter particles is basic. Applicants respectfully submit that this is an incorrect assertion. As set forth above, the Examiner has already asserted that Levy does not disclose mesoporous activated carbon. (See paragraph 3, Office Action dated 6/14/05). Moreover, Levy teaches a filter media "composed of one or more substances selected from a group consisting of, *inter alia*, activated carbon and strong base anion resin." (Col. 35, lines 11-16). Such a disclosure does not teach that the activated carbon is basic as asserted by the Examiner, but teaches a strong base anion resin that may be combined with an activated carbon. This is not the same as disclosing a basic activated carbon as recited in Applicants' claim 12.

Accordingly, Applicants respectfully request the rejection under 35 U.S.C. §103 of independent claims 1, 7, and 13 to be withdrawn. As claims 2-6, 8, 9, 11, 12, and 14-15 depend from claims 1, 7, or 13, Applicants respectfully request the rejection of these claims be withdrawn as well.

CONCLUSION

Applicants respectfully submit that the present application is in condition for allowance. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully solicited.

Respectfully submitted,
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